

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: )  
WALSDORFF et al. ) Applications

Serial No. Not Assigned )

Filed: )

For: CATALYSTS FOR HETEROGENEOUSLY CATALYZED REACTIONS

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Sir:

Prior to examination, kindly amend the above-identified application as follows.

IN THE CLAIMS

Please amend the claims as shown in the attached sheets.


REMARKS

The claims have been amended to eliminate multiple dependency. No new matter has been added. A clean copy of the claims is attached.

Entry of the above amendment is respectfully solicited.

Respectfully submitted,

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AMENDED CLAIMS FOR OZ 51416

3. A catalyst for heterogeneously catalyzed reactions as claimed in claim 1 [either of claims 1 and 2], wherein the active components employed are from 1 to 15% by weight of copper, from 0.1 to 6% by weight of alkali metals, from 0 to 5% by weight of alkaline earth metals, rare-earth metals or mixtures thereof.
5. A process for the preparation of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 [one of claims 1 to 3], which comprises impregnating the  $\delta$ -Al<sub>2</sub>O<sub>3</sub>-containing support with salts of copper, alkali metals and, if desired, alkaline earth metals, rare-earth metals or mixtures thereof, separately from one another or together, if desired with the addition of acids or oxidants.
7. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 [one of claims 1 to 4] for exothermic gas-phase reactions.
8. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 [one of claims 1 to 4] for oxychlorination reactions.
9. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 [one of claims 1 to 4] for the oxychlorination of ethylene to 1,2-dichloroethane.
10. A process for the preparation of 1,2-dichloroethane, which comprises reacting ethylene with hydrogen chloride and air or oxygen in the presence of a catalyst as claimed in claim 1 [one of claims 1 to 4] at a temperature of from 150 to 400°C and a pressure of from 1 to 10 bar.
11. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 [one of claims 1 to 4] for partial oxidation reactions.

CLEAN CLAIMS OZ 51416

1. A catalyst for heterogeneously catalyzed reactions, which comprises active components and a catalyst support comprising amounts of  $\delta$ - $\text{Al}_2\text{O}_3$  which can be detected by X-ray diffractometry.
2. A catalyst for heterogeneously catalyzed reactions as claimed in claim 1, wherein the catalyst support comprises from 10 to 100% by weight of  $\delta$ - $\text{Al}_2\text{O}_3$ .
3. A catalyst for heterogeneously catalyzed reactions as claimed in claim 1, wherein the active components employed are from 1 to 15% by weight of copper, from 0.1 to 6% by weight of alkali metals, from 0 to 5% by weight of alkaline earth metals, rare-earth metals or mixtures thereof.
4. A catalyst for heterogeneously catalyzed reactions as claimed in claim 1, prepared by impregnating a shaped  $\delta$ - $\text{Al}_2\text{O}_3$ -containing support having a BET surface area of from 80 to 250  $\text{g}/\text{m}^2$  with salts of copper, alkali metals and, if desired, alkaline earth metals, rare-earth metals or mixtures thereof.
5. A process for the preparation of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1, which comprises impregnating the  $\delta$ - $\text{Al}_2\text{O}_3$ -containing support with salts of copper, alkali metals and, if desired, alkaline earth metals, rare-earth metals or mixtures thereof, separately from one another or together, if

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desired with the addition of acids or oxidants.

6. A process for the preparation of a catalyst for heterogeneously catalyzed reactions as claimed in claim 5, wherein the salts employed are chlorides.
7. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 for exothermic gas-phase reactions.
8. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 for oxychlorination reactions.
9. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 for the oxychlorination of ethylene to 1,2-dichloroethane.
10. A process for the preparation of 1,2-dichloroethane, which comprises reacting ethylene with hydrogen chloride and air or oxygen in the presence of a catalyst as claimed in claim 1 at a temperature of from 150 to 400°C and a pressure of from 1 to 10 bar.
11. The use of a catalyst for heterogeneously catalyzed reactions as claimed in claim 1 for partial oxidation reactions.